NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

TOXIC SALT REDUCTION

(acre)

CODE 610

DEFINITION

Reducing or redistributing the harmful concentrations of salt and/or sodium in a soil (sometimes referred to as leaching).

PURPOSE

To permit desirable plants to grow.

CONDITIONS WHERE PRACTICE APPLIES

On land where the accumulation of salt at or near the surface limits the growth of desirable plants.

CRITERIA

All salt reduction must be based on a complete laboratory analysis of the soil by one-foot increments through the effective rooting depth. Diagnosis shall identify whether the soil is saline, saline/sodic or non-saline/sodic.

Prior to treatment, good internal drainage must be provided. Conduct drainage investigations to determine if the watertable should be lowered and chisel or subsoil as needed.

Salt reduction may be accomplished by one or more of the following methods.

1. Saline Soils: (Electrical Conductivity (EC) > 4Mmhos/cm, Sodium Content (Na) < 15%, pH < 8.5)

   a) No amendments necessary. Leach with adequate amounts of good quality water to reduce salinity to an acceptable level.

2. Saline/Sodic: (EC > 4 Mmhos/cm, Na > 15%, pH > 8.5).

Sodic Soils: (EC < 4 Mmhos/cm, Na > 15%, pH > 8,5).

a) Apply recommended gypsum or sulfuric acid and leach immediately. If sulfur is applied, keep soil moist (and let soil warm) for 30 day before leaching

b) Schedule leaching irrigations to remove excess salts.

c) Deep plow (over 18 inches) to invert or mix surface salt accumulations or to turn up less salty soils.

The leaching requirement for Toxic Salt Reduction shall be determined using the procedure in the National Engineering Handbook, Part 623, Chapter 2, Leaching Requirements for Salinity Control. Refer to the Colorado Conservation Practice Standard Code 449, Irrigation Water Management for additional requirements.

CONSIDERATIONS

Water Quantity

1. Effects on the water budget, especially on infiltration, deep percolation, and ground water recharge. Consider the variability (volume and timing) of the leaching fraction, the need for additional irrigation water, and the impact of drainage if installed as an associated practice.

Water Quality

1. Effects on irrigation induced erosion, sedimentation, and soluble and sediment-attached substances in irrigation tailwater.

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2. Effects of leaching on the volume of toxic salts and soluble nutrients and pesticides removed from the root zone. Identify the ultimate residence of the chemicals and the surface and ground water impact of drainage if installed as an associated practice.

PLANS AND SPECIFICATIONS

Site specifications for practice performance and maintenance shall be prepared for each field or treatment unit according to the Criteria, Considerations, and Operation and Maintenance described in this standard.

Site specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

Maintain all equipment for the proper placement and distribution of amendments and irrigation water.

Monitor the germination and growth of seedlings along with soil dispersal and crust formation to determine if toxic levels of salt or sodium remain. Develop a management strategy to reduce the reoccurrence of salt and/or sodium problems.

REFERENCES

National Engineering Handbook, Part 623. Chapter 2. Leaching Requirements for Salinity Control. 1993. USDA Natural Resources Conservation Service. Lakewood, CO.

Colorado Conservation Practice Standard Code 449. Irrigation Water Management. 2002. USDA Natural Resources Conservation Service. Lakewood, CO.